

**Draft Rule  
#01-180(WPCB)**

**Rule 13: Operational Rule**

SECTION 1. 327 IAC 8-13 IS ADDED TO READ AS FOLLOWS:

**327 IAC 8-13-1 Purpose of rule**

**Authority:** IC 13-13-5-1; IC 13-13-5-2; IC13-18-3-2; IC 13-18-11-13; IC 13-18-16-9

**Affected:** IC 13-14-1-13; IC 13-14-8; IC 13-18-11-2

**Sec. 1.** The purpose of this rule is to establish and maintain standards of operation and require corrections to drinking water source, water treatment plant and distribution system operations so as to protect human health and prevent adverse impacts to drinking water. *(Water Pollution Control Board; 327 IAC 8-13-1)*

**327 IAC 8-13-2 Applicability of rule**

**Authority:** IC 13-13-5-1; IC 13-13-5-2; IC13-18-3-2; IC 13-18-11-13; IC 13-18-16-9

**Affected:** IC 13-14-1-13; IC 13-14-8; IC 13-18-11-2

**Sec. 2.** The standards and practices established in this rule apply to the operation and maintenance of all new or existing public water systems in Indiana. Each public water system shall comply with this rule. *(Water Pollution Control Board; 327 IAC 8-13-2)*

**327 IAC 8-13-3 Definitions**

**Authority:** IC 13-13-5-1; IC 13-13-5-2; IC13-18-3-2; IC 13-18-11-13; IC 13-18-16-9

**Affected:** IC 13-14-1-13; IC 13-14-8; IC 13-18-11-2

**Sec. 3.** The following definitions apply throughout this rule:

**(1) "Aggressiveness"** means the wearing away or deterioration of a material due to chemical reactions with its environment.

**(2) "Chlorine Demand"** means the difference between the amount of chlorine added to the water and the amount of residual chlorine remaining after a given contact time. Chlorine demand may change with dosage, time, temperature, PH, and nature and amount of the impurities in the water.

**(3) "Consecutive water system"** means one public water system (PWS) supplies water to one or more other PWSs (40 CFR 141.29).

**(4) "CT" or "CTcalc"** is the product of residual disinfectant concentration (C) in milligrams per liter determined before or at the first customer and the corresponding disinfectant contact time (T) in minutes, such as C H T. If a public

water system applies disinfectants at more than one (1) point prior to the first customer, it must determine the CT of each disinfectant sequence before or at the first customer to determine the total percent inactivation or total inactivation ratio. In determining the total inactivation ratio, the public water system must determine the residual disinfectant concentration of each disinfection sequence and corresponding contact time before any subsequent disinfection application point. CT<sub>99.9</sub> is the CT value required for ninety-nine and nine-tenths percent (99.9%) (3-log) inactivation of Giardia lamblia cysts. CT<sub>99.9</sub> for a variety of disinfectants and conditions appears in Tables 1.1-1.6, 2.1, and 3.1 of paragraph 141.74(b)(3).<sup>1</sup>

$$\frac{CT_{calc}}{CT_{99.9}}$$

$$CT_{99.9}$$

is the inactivation ratio. The sum of the inactivation ratios or total inactivation ratio shown as:

$$\sum \frac{(CT_{calc})}{(CT_{99.9})}$$

is calculated by adding together the inactivation ratio for each disinfection sequence. A total inactivation ratio equal to or greater than one (1.0) is assumed to provide a 3-log inactivation of Giardia lamblia cysts.

(5) "Critical part" means a piece of equipment essential to the safe and reliable operation of a public water system, including expendable parts such as glassware, fittings, hose clamps, and gaskets.

(6) "Distribution system" means one (1) of the following:

(A) In a community public water system, the term means the network of water piping, pumping stations, storage equipment, valves, fire hydrants, pressure regulators, and equipment required to transport water to the customer's service connection from one (1) of the following points:

- (i) A treatment plant.
- (ii) A source of raw water supply if no treatment is provided.
- (iii) A source of purchased water supply if no additional treatment is provided.

(B) In a noncommunity public water system, the term means the network of water piping, pumping stations, valves, fire hydrants, pressure regulators, and equipment required to transport water to the point of use from one (1) of the following:

- (i) A point that is one (1) foot beyond the water storage tank.
- (ii) The well if no water storage tank is utilized.
- (iii) A source of purchased water supply if no additional treatment is provided.

(7) "Filter run time" means the length of time a filter is operating between backwash cycles to produce filtered water.

(8) "Flushing" means sending water through a portion of the system at a sufficient

volume and velocity with the intent to remove undesirable materials.

(9) "Flushing device" means any device used for flushing.

(10) "Hydraulic information" means the slope of each of the following:

- (A) Hydraulic grade line.
- (B) Water surface in an open channel.
- (C) Water surface of the groundwater table.
- (D) Water pressure for pipe under pressure (shows different pressures plains).

(11) "Interconnections" means a public water system supplies water to or

receives water

(12) "Maintenance Log" means a method of recording the following:

- (A) Maintenance of the distribution system, including appropriate pipe replacement and repair procedures.
- (B) Main flushing programs.
- (C) Maintenance of storage tanks and reservoirs.
- (D) Continual maintenance of positive water pressure in all parts of the distribution system.

(13) "Major system components" means any equipment that if failed would cause:

- (A) water pressure below 20 psi at the consumer's meter; or
- (B) water quality that violates 327 IAC 8-2.

(14) "Process flow" means how the water flows from the source through the treatment process to the first customer.

(15) "Pumping test" means a test that is run on a well to determine static water level, pumping water level, and draw down.

(16) "Pumping water level" means the vertical distance in feet from the centerline of the pump discharge to the stabilized level of the water being pumped.

(17) "Rapid mix" means the rapid dispersion of chemicals throughout the water to be treated, usually by violent agitation.

(18) "Secondary maximum contaminant level" or "SMCL" means the maximum permissible level of a contaminant in water which is delivered to the free flowing outlet of the ultimate user of a public water system. The term does not include contaminants added to the water under circumstances controlled by the user, except those resulting from corrosion of piping and plumbing caused by water quality. SMCLs apply to public water systems and, in the judgement of the commissioner, are requisite to protect the public welfare.

(19) "Service Connection" means a piping connection between the water purveyor's main or well and a consumer's system.

(20) "Source" means the origin of the water that is treated or distributed whether it is ground water, surface water, or purchased water.

(21) "Specific capacity" means the rate of discharge of a production well per unit of draw down. This term is commonly expressed as gallons per minute per foot of drawdown.

**(22) “Static water level” means the elevation or level of the water table in a well when the pump is not operating.**

**(23) “Supplier of Water” means owner, operator, purveyor, or governing body of a public water system.**

**(24) “Susceptible population” means a population subgroup that is more sensitive to a contaminant than the general population. Susceptible populations include the following:**

- (A) Schools.**
- (B) Correctional facilities.**
- (C) Health care facilities.**
- (D) Agricultural labor camps.**

**(25) “Treatment system” means any combination of devices and chemicals used for the purpose of modifying the water’s characteristics.**

**(26) “Well yield” means the flow rate at which a well will discharge water on a sustained basis.**

*(Water Pollution Control Board; 327 IAC 8-13-3)*

#### **327 IAC 8-13-4 Operation**

**Authority: IC 13-13-5-1; IC 13-13-5-2; IC13-18-3-2; IC 13-18-11-13; IC 13-18-16-9**

**Affected: IC 13-14-1-13; IC 13-14-8; IC 13-18-11-2**

**(From 8-13-5 (b) An owner of a public water system is responsible for ensuring that:**

**(1) The system complies with this rule.**

**(2) The system’s operating staff has all of the resources and training necessary for proper operation of the system.)**

**Refer to 327 IAC 8-12-3.2**

*(Water Pollution Control Board; 327 IAC 8-13-4)*

#### **327 IAC 8-13-5 General Maintenance**

**Authority: IC 13-13-5-1; IC 13-13-5-2; IC13-18-3-2; IC 13-18-11-13; IC 13-18-16-9**

**Affected: IC 13-14-1-13; IC 13-14-8; IC 13-18-11-2**

**Sec. 5. (a) A supplier of water shall ensure that the public water system is operated to provide and maintain safe drinking water to consumers. This responsibility includes the following:**

- (1) Maintaining or contracting trained staff to perform all necessary duties.**
- (2) Performing maintenance and replacement of equipment when necessary.**
- (3) Providing testing to control and monitor treatment processes and chemical addition programs.**
- (4) Providing laboratory equipment for determining the effectiveness of treatment. Testing and measurement equipment shall be provided to monitor for control of the treatment processes at all plants.**

(b) An owner of a public water system is responsible for ensuring that:

(1) The system complies with this rule.

(2) The system's operating staff has all of the resources and training necessary for proper maintenance of the system.

(c) A supplier of water shall meet the flow rate and pressure requirements set forth in 327 IAC 8-3.4-12.

(d) A public water system shall ensure that chemicals added to drinking water and passed to the distribution system are approved by any of the following:

(1) As required by the Indirect and Direct Additive Rule.

(2) As required by NSF 60 and 61.

(e) All chemical containers shall bear the name, address and telephone number of the supplier, along with a functional name or identification and strength of the chemical.

(f) Chemicals shall not be fed in excess of the maximum dosage approved by U.S. EPA or USFDA.

(g) A public water system shall comply with 327 IAC 8-3 when one or more construction permits are required.

(h) A public water system shall have an operation and maintenance program in which the system maintains compliance with this article and The Safe Drinking Water Act. The program must also include a documented operation and maintenance plan. Public water systems classified as class DSS (distribution system small) or other systems approved by the commissioner may use a checklist instead of a documented operational plan.

(i) A public water system shall have a procedure or method to obtain critical spare parts available to address reasonably foreseeable needs in a timely fashion in order to prevent adverse impacts to drinking water. (*Water Pollution Control Board; 327 IAC 8-13-5*)

#### **327 IAC 8-13-6 Operation and Maintenance Program**

**Authority:** IC 13-13-5-1; IC 13-13-5-2; IC 13-18-3-2; IC 13-18-11-13; IC 13-18-16-9

**Affected:** IC 13-14-1-13; IC 13-14-8; IC 13-18-11-2

**Sec. 6. (a)** The Operation and Maintenance Program required under section 5 of this rule must contain a description of known system components including the following:

(1) Source.

(2) Treatment system.

(3) Storage system.

- (4) Distribution system.**
- (5) Interconnections.**
- (6) Meters that are used for system flow or process control.**
- (7) Pumps.**

**The description must include all information necessary for operation, maintenance, repair and their location as applicable based on the best available information.**

**(b) The Operation and Maintenance Program required under section 5 of this rule must contain an approach for maintaining the operation to include at a minimum the following:**

- (1) A schematic drawing of the process flow.**
- (2) Schematic drawings for the following if available:**
  - (A) Hydraulic information.**
  - (B) Supervisory Control and Data Acquisition (SCADA) system information.**
- (3) Process operation description which includes all of the major system components.**
- (4) Manufacturer's Operation Manuals if available.**
- (5) An overview of security measures which may include fencing, securing of components, employee training, and access controls.**

**(c) The Operation and Maintenance Program required under section 5 of this rule must contain a maintenance schedule of how major system components are maintained including the following:**

- (1) Target frequency.**
- (2) Maintenance logs.**
- (3) The portion of the manufacturer's O & M manual dealing with maintenance frequency if available.**
- (4) Description of maintenance procedures.**

**(d) The Operation and Maintenance Program required under section 5 of this rule must contain a contact list with names and phone numbers including the following as applicable:**

- (1) Vendors and suppliers.**
- (2) Responsible staff.**
- (3) Contractors utilized by a public water system.**
- (4) Utilities.**
- (5) Regulatory Agencies.**
- (6) Management.**
- (7) Consultants used by a public water system.**
- (8) Critical Users.**
- (9) Emergency contacts.**
- (10) Other contacts utilized for O & M functions.**

(e) The Operation and Maintenance Program required under section 5 of this rule must contain an approach for maintaining safety procedures.

(f) The Operation and Maintenance Program required under section 5 of this rule must contain an approach for maintaining a supply inventory including the following if applicable:

- (1) Treatment chemicals.
- (2) Critical spare part/equipment/lubricants.
- (3) Testing/lab supplies.
- (4) General supplies.

(g) The Operation and Maintenance Program required under section 5 of this rule must list information regarding compliance monitoring and reporting including the following:

- (1) To whom the operating staff of a public water system reports.
- (2) What is reported.
- (3) Frequency of reporting.
- (4) Where reports are sent.
- (5) Method of information reporting.
- (6) Location of where reports are maintained.

(h) The Operation and Maintenance Program required under section 5 of this rule must contain a method for keeping records. The method must include keeping the records current for all information required by this section.

(i) For all existing public water systems, the Operation and Maintenance Program required under section 5 of this rule must be in place according to the requirements below:

- (1) DSS and DSM one year from the effective date of this rule.
- (2) DSL and WT2 two years from the effective date of this rule.
- (3) WT3, WT4, WT5 three years from the effective date of this rule.

(j) All new construction completed on any existing public water system after the effective date of the rule must be accurately represented and included in The Operation and Maintenance Program within one year of completion of that construction.

(k) For new public water systems that commence construction on or after the effective date of this rule , an Operation and Maintenance Program required under section 5 of this rule must be in place within one (1) year of completion of construction.

(l) The commissioner may require additional information if necessary on a case-by-case basis. (Water Pollution Control Board; 327 IAC 8-13-6)

### 327 IAC 8-13-7 Distribution System

Authority: IC 13-13-5-1; IC 13-13-5-2; IC13-18-3-2; IC 13-18-11-13; IC 13-18-16-9

Affected: IC 13-14-1-13; IC 13-14-8; IC 13-18-11-2

Sec. 7. (a) Distribution system pressure requirements are as follows:

(1) The system shall be designed and operated to maintain a minimum residual pressure in accordance of 327 IAC 8-3.4-12

(2) The system shall be designed to at least meet existing demands on the distribution system. A public water system may not add customers unless they can show they can meet section 7(a)(1). If twenty (20) psi can not be maintained the system shall be upgraded to meet requirements.

(3) Where the distribution system, existing or new storage, or pumping cannot provide a minimum pressure of twenty (20) psi throughout the distribution system at ground level, it shall be necessary to create a boosted pressure zone to serve those portions of the system.

(4) Community and Nontransient noncommunity systems must have a method for recording pressure twenty-four (24) hours a day so that pressure does not fall below twenty (20) psi.

(b) A sample site plan and map including addresses must meet the following:

(1) A Public water system must collect total coliform samples at sites which are representative of water throughout the distribution system according to a written sample siting plan approved by the commissioner. A site plan is to be on file in the Drinking Water Branch, Office of Water Quality, and the system files.

(2) The general location of routine sample sites must be indicated on the site plan and map and the specific locations are to be identified using a three (3) digit identification number e.g., (001). Using the three (3) digit identification number, a corresponding list is to be completed which includes the address and phone number of each site. The number of sites is based on the population served by the water supply. Systems should choose sites with dedicated sampling taps or businesses with ready access. Dead end lines and outside spigots shall be avoided. The plan, as submitted to the Drinking Water Branch, is reviewed for completeness by the field inspector.

(3) The sample site plan and map required under subdivision (d)(1) must be reviewed annually and updated as appropriate.

(c) A public water system must meet the following:

(1) Dead ends shall be minimized by looping mains whenever feasible. Where dead end mains occur, they shall terminate with an adequate flushing device. Refer to 327 IAC 8-3.2-13 for further dead end requirements.

(2) A flushing device must meet the following:



- (A) Existing public water systems shall provide flushing devices to ensure that quantity and quality of water are not adversely impacted.
- (B) Public water systems designed and constructed after the effective date of this rule must comply with flushing device requirements of 327 IAC 8-3.2-15.
- (C) A flushing device that has an apparatus that drains which is found to be connected to, or located within ten (10) feet of sanitary sewers or storm sewer inlets must be disconnected, relocated, or plugged.
- (3) Valves must meet the following:
- (A) Public water systems shall have valves to minimize customer service disruptions.
- (B) Public water systems designed and constructed after the effective date of this rule must comply with valve requirements of 327 IAC 8-3.2-14.
- (C) Valves should be exercised at a frequency to maintain proper operation.
- (4) Water Loading Stations must meet the following:
- (A) There may be no back flow to the public water supply.
- (B) The piping arrangement shall prevent contaminants being transferred from a hauling vessel to others subsequently using the station.
- (C) Hose connections used for potable water may not come into contact with the ground. If the hose connections become contaminated by the ground, they shall be disinfected according to 327 IAC 8-3.2-18.
- (5) Booster Stations shall have automatic control equipment installed to prevent the pump from causing a vacuum or lowering water pressure in any part of the distribution to less than twenty (20) psi as measured at ground level.
- (d) A supplier of water shall perform routine maintenance to ensure leaks are discovered and repaired as soon as possible.
- (e) Backflow preventors shall be provided and maintained according to 327 IAC 8-10. (Water Pollution Control Board; 327 IAC 8-13-7)

#### 327 IAC 8-13-8 Source, pumps, and control valves

Authority:

Affected:

Sec. 8. (a) Source requirements are as follows:

(1) Requirements for wells are as follows:

(A) Wells constructed after the effective date of this rule shall be constructed according to 327 IAC 8-3.4-1.

(B) Pumping tests shall be conducted as follows:

(i) Community and Nontransient noncommunity systems with susceptible populations shall conduct pump tests no less frequently than once in a two year period;

(ii) Nontransient noncommunity and Transient water systems without susceptible populations shall conduct pump tests no less frequently than once in a four year period; or

(iii) A public water system shall have a plan in place for conducting pumping tests based on previous records that demonstrate efficiency of the well.

(C) Pumping tests shall be used to determine specific capacity or efficiency of the well.

(D) Static water levels and pumping water levels shall be monitored according to the following:

(i) Community and Nontransient noncommunity systems with susceptible populations shall monitor twice a year.

(ii) Nontransient noncommunity and Transient systems without susceptible populations shall monitor once a year during peak pumping season.

(E) The following information on well and well pumping equipment shall be maintained by the utility, and updated when any changes occur:

(i) Well log if available.

(ii) Date well was installed.

(iii) Rated Capacity.

(iv) Total Well Depth.

(v) Diameter of casing.

(vi) Type of aquifer formation if known.

(vii) Length of screen or open interval.

(viii) Diameter of screen, if applicable.

(ix) Type of screen material and slot/opening, if applicable.

(x) Date and results of most recent flow test.

(xi) Specific Capacity of well at installation.

(xii) Design head and shut-off pressure of pump.

(xiii) Pump suction setting depth.

(xiv) Pump head discharge size.

(xv) Size and type of column piping, including length and number of column sections.

(xvi) Number of pump stages.

(xvii) Pump curves from the manufacturer or based on the most recent flow test.

(xviii) Data on the pump motor, including type, horsepower, voltage, RPM, amperes and number of phases.

(xix) Well or pump maintenance activities records. (xx) Cleaning reports shall be kept on hand for the life of the well.

(F) At a minimum, production wells and or well pumps shall be cleaned or repaired if one of the following conditions exist:

(i) Well yield is less than sixty-six percent (66%) of original capacity.

(ii) Significant increases in drawdown are identified.

(iii) The presence of fine-grained materials, sand, silt, or clay, are identified in the pumped water.

(iv) Increased or significant changes in water turbidity, odor, taste, or color are identified.

(v) A complete loss of production from the well.

(vi) Any other significant change in the operation of the well or pumping equipment is recognized.

(2) Requirements for surface intakes are as follows:

(A) The minimum velocity of flow must be twenty-five hundredths (0.25) to fifty hundredths (0.50) feet per second (fps) through the inlet structure.

(B) Protection must be provided against damage due to dragging anchors, ice, and other activities.

(C) Diversion devices shall be operated in a manner to keep materials from clogging the intake structure.

(D) As built drawings must be maintained in the records.

(E) Impoundments, reservoirs, and associated spillways and release structures owned and operated by a public water supply shall be inspected on a regular basis and maintained to ensure the continued provision of water.

(3) Potable water lines are to be distinguished from all other piping.

(4) All community water systems shall have an approved wellhead program pursuant to 327 IAC 8-4.1.

(5) All public water systems shall take into consideration the following items to protect water supplies from the entrance of contaminants:

(A) Privies.

(B) Septic tanks.

(C) Cesspools.

(D) Sewers (storm, sanitary, combined, and sewer service connections).

(E) Subsurface seepage-disposal lines.

(F) Pits or ponds receiving fluids such as surface waters, oils, and grease.

(G) Flood waters.

(6) Security of source

What should be on Web site? ( discuss with group)

(b) A public water system must comply with the following pump and control valve requirements:

(1) The following are requirements concerning lubrication:

(A) Water lubricated pumps are required.

(B) All prelubricating lines shall be equipped with metering controls to monitor and limit the volume of prelubrication water.

(2) Maintenance inspection of pumps shall evaluate the following as applicable to ensure maximum operating efficiency and minimum maintenance expenditures:

- (A) Priming system.
- (B) Packing and seals.
- (C) Bearings.
- (D) Vibration.
- (E) Alignment.
- (F) Sensors and controls.
- (G) Pressure gauges.

**(3) Pump valve requirements are as follows:**

- (A) Pumps shall be adequately valved to permit satisfactory operation, maintenance, and repair of the equipment.
- (B) If foot valves are necessary, they must:
  - (i) Have a net valve area of at least two and one-half (2 1/2) times the area of the suction pipe; and
  - (ii) Be screened.
- (C) Each pump shall have a positive-acting check valve between the pump and the discharge valve.

**(7) Any pump discharging to the distribution system or pumping within the distribution system shall have the following:**

- (A) A standard pressure gauge on its suction and discharge line.
- (B) A compound gauge on its suction line if applicable.

*(Water Pollution Control Board; 327 IAC 8-13-8)*

**SECTION 9. 327 IAC 8-13-9 IS ADDED TO READ AS FOLLOWS:**

**327 IAC 8-13-9 Chemical Treatment**

**Authority:**

**Affected:**

**Sec. 9. (a) General requirements for a public water system that use chemical treatment in order to ensure that the finished water supplied to consumers does not exceed the maximum contaminant levels (MCL), the maximum residual disinfectant levels (MRDL), the action levels, or the treatment techniques contained in 327 IAC 8-2, 327 IAC 8-2.5 or 327 IAC 8-2.6 are as follows:**

**(1) Feed equipment requirements are as follows:**

- (A) Chemical feeders shall be:
  - (i) accessible for repair and maintenance; and
  - (ii) protected against dust hazard.
- (B) Chemical feeders, the chemical storage area, and feed equipment shall be conveniently located as near as practical to the feed point and near points of application to minimize length of feed lines.
- (C) Feed equipment shall only be operated when there is flow past the point of application.

- (D) Chemical feed rates shall be proportional to flow or adjusted as necessary to account for water quality conditions.
- (E) A method of measuring chemical usage shall be provided for all chemicals.
- (F) A separate feeder shall be used for each chemical applied.
- (G) Where disinfection is required, backup disinfection equipment shall be provided where necessary to meet contact time and disinfectant residual when operating conditions do not allow for the repair of the chlorination system during off-pumping periods.
- (2) Equipment shall be installed and operated at the water supply to comply with the disinfectant residual requirements of this section.
- (3) Piping identification requirements are as follows:
- (A) A water treatment facility shall have the means to identify visible piping in a water treatment facility by way of labels, tags, or color coding as described in Recommended Standards for Water Treatment, or other approved standards. A consistent standard shall be used throughout the system.
  - (B) Exposed potable water lines shall be clearly and permanently identified where dual water lines or pressure sewer systems are present.
- (4) Chemical storage and handling requirements are as follows:
- (A) All chlorine containers, full, empty, or in use, shall be stored in a secure position to prevent leakage, damage, or movement.
  - (B) Feed stock solution must be maintained in such a manner that prevents biological growth.
  - (C) Corrosion-resistant containers shall be provided for solution tanks and feeders. Existing equipment may be used as long as the integrity is maintained.
  - (D) Appropriate personal protection equipment must be provided. Material Safety Data Sheets and manufacturer's recommendations for handling chemicals must be available where chemicals are stored or handled.
  - (E) Proper safety measures must be practiced according to Recommended Standards for Water Treatment and other applicable requirements.
- (b) Factors in determining chlorine demand are as follows:
- (1) pH.
  - (2) Water temperature.
  - (3) Contact time.
  - (4) Presence in the water of substances having chlorine demand such as hydrogen sulfide, iron, manganese and nitrogenous compounds including ammonia.
  - (5) Supplemental treatment such as aeration which reduces chlorine demand.
  - (6) Natural organic matter, Total organic carbon, suspended solids, and turbidity.

(c) Requirements for clearwells used for disinfection are as follows:

(1) When finished water storage is used to provide proper contact time for disinfection, documentation shall be maintained and available to assure adequate detention time under all operating conditions.

(2) Residual levels of total chlorine shall be maintained at least at one and zero-tenths (1.0) milligram per liter or at a level that will achieve the necessary contact time at or prior to the first customer.

(d) Specific requirements for chlorination are as follows:

(1) Chlorination equipment shall be:

(A) Capable of maintaining a minimum free chlorine residual of twenty-hundredths (0.20) milligram per liter or a minimum combined chlorine residual of one and zero-tenths (1.0) milligram per liter in all parts of the distribution system.

(B) Capable of feeding chlorine to the water being treated at a rate of at least four and zero-tenths (4.0) milligrams per liter except where the water has a high chlorine demand as determined by the manufacturer (b).

(2) Continuous disinfection of water drawn from surface water sources may be required by the commissioner if water quality, weather conditions, or system construction indicates a potential health hazard.

(3) Disinfection is to supplement and not replace proper well construction, and source protection.

(4) Testing for free and total chlorine residual shall be completed daily, when the system is in operation, at the plant, and in the distribution system at one or more points representative of the distribution system. A free and total chlorine residual test shall be completed and recorded on all bacteriological sample reports prior to submitting the bacteriological results.

(5) The commissioner shall enforce any of the following:

(A) Minimum chlorine dose for all public water systems per 327 IAC 8-2-8.7(5) and 327 IAC 8-2-8.8(d).

(B) Minimum chlorine residual for disinfection.

(C) Minimum disinfection maintenance.

(6) Distribution system for ground water systems shall be maintained as follows:

(A) At a minimum, twenty-hundredths (0.20) milligram per liter free chlorine;

(B) The residual disinfectant concentration in the water entering the distribution system, measured as specified in 327 IAC 8-2-8.7(5) and 327 IAC 8-2-8.8(d), cannot be less than two-tenths (0.2) milligram per liter for more than four (4) hours; or

(C) The residual disinfectant concentration in the distribution system, measured as total chlorine, combined chlorine, or chlorine dioxide, as specified in 327 IAC 8-2-8.7(5) and 327 IAC 8-2-8.8(d), cannot be

undetectable in more than five percent (5%) of the samples each month, for any two (2) consecutive months that the system serves water to the public. Water in the distribution system with a heterotrophic bacteria concentration less than or equal to five hundred (500) per milliliter, measured as heterotrophic plate count (HPC) as specified in 327 IAC 8-2-8.7(3), is required to have a detectable disinfectant residual for purposes of determining compliance with this requirement. Thus, the value V in the following formula cannot exceed five percent (5%) in one (1) month, for any two (2) consecutive months:

$$V = \frac{c+d+e}{a+b} \times 100$$

Where a = number of instances where the residual disinfectant concentration is measured  
b = number of instances where the residual disinfectant concentration is not measured

c = number of instances where the residual disinfectant concentration is not measured but HPC is measured

d = number of instances where the residual disinfectant concentration is measured but not detected and no HPC is measured.

e = number of instances where no residual disinfectant concentration is detected and where the HPC is greater than five hundred (500) per milliliter

f = number of instances where the residual disinfectant concentration is not measured and HPC is greater than five hundred (500) per milliliter

(7) If the commissioner determines based on site specific considerations, that a system has no means for having a sample transported and analyzed for HPC by a certified laboratory under the requisite time and temperature conditions specified in 327 IAC 8-2-8.7 and that the system is providing adequate disinfection in the distribution system, the requirements of subsection (5) do not apply.

(8) If the commissioner determines an increase in disinfectant residuals based on bacteriological samples that indicate the need for increased residual.

(9) If residuals cannot be maintained, operational changes shall be made to assure the residual is maintained. Additional chlorination facilities shall be installed and operated.

(10) All samples for total chlorine shall be analyzed within eight (8) hours after collection.

(11) Adding disinfectant shall not result in an increase in other contaminants of concern, depending on the characteristics of the source water and the distribution system.

These contaminants include disinfection byproducts, lead, copper, and arsenic. A system will have the flexibility to select among a variety of corrective actions according to EPA. These would include options such as treatment of source, or purchasing water from another source, which would avoid these types of problems. Any options will be acceptable upon the approval of the commissioner.

(e) Specific requirements for treating with chloramines are as follows:

(1) Equipment used for the production for chloramines shall be capable of maintaining a minimum of one and zero-tenths (1.0) milligram per liter total chlorine or a maximum of four and zero-tenths (4.0) milligrams per liter in any parts of the distribution system.

(2) Continuous disinfection of water drawn from groundwater sources may be required by the commissioner if water quality data, well construction, or system construction indicates a potential health hazard.

(3) Disinfection is to supplement and not replace proper well location, construction, and source protection.

(4) Testing for chloramine residual shall be completed daily while the system is in operation, at the plant tap, and in the distribution system at least at the points representative of the distribution system. A chloramine residual shall be completed and recorded on all bacteriological sample reports prior to releasing the bacteriological result.

(5) The commissioner may require any of the following:

(A) A minimum contact time for all public water systems per 327 IAC 8-2-1(15) and 327 IAC 8-2-1(19).

(B) Additional chloramine disinfection.

(C) Other disinfection methodology.

(6) Distribution residual for ground water systems shall be maintained as follows:

(A) At a minimum of one and zero-tenths (1.0) milligram per liter total chlorine;

(B) The residual disinfectant concentration in the water entering the distribution system, measured as specified in 327 IAC 8-2-8.7(5) and 327 IAC 8-2-8.8(d), cannot be less than two-tenths (0.2) milligram per liter for more

than four (4) hours.

The residual disinfectant concentration in the distribution system, measured as total chlorine, combined chlorine, or chlorine dioxide, as

specified in 327 IAC 8-2-8.7(5) and 327 IAC 8-2-8.8(d), cannot be

undetectable more than five percent (5%) of the samples each month, for

any two consecutive months that the system serves water to the public.

Water in the distribution system with a heterotrophic bacteria concentration

less than or equal to five hundred (500) per milliliter, measured as

heterotrophic plate count (HPC) as specified in 327 IAC 8-2-8.7(3), is deemed

to have a detectable disinfectant residual for purposes of determining

compliance with this requirement. Thus, the value V in the following formula cannot exceed five percent (5%) in one (1) month, for any two (2) consecutive months:

$$V = \frac{c+d+e}{a+b} \times 100$$



Where a = number of instances where the residual disinfectant concentration is measured

:

b = number of instances where the residual disinfectant concentration is not measured but HPC is measured

c = number of instances where the residual disinfectant concentration is not measured but not detected and no HPC is measured.

d = number of instances where no residual disinfectant concentration is detected where the HPC is greater than five hundred (500) per milliliter

e = number of instances where the residual disinfectant concentration is not measured and HPC is greater than five hundred (500) per milliliter

(7) If the commissioner determines, based on site-specific conditions, that a system has no means for having a sample transported and analyzed for HPC by a certified laboratory under the requisite time and temperature as specified in 327 IAC 8-2-8.7 and that the system is providing adequate disinfection through the distribution system, the requirements of subdivision (3) do not apply.

(8) The commissioner may require an increase in disinfectant residuals or bacteriological samples that demonstrate the need for increased residual.

(9) If residual cannot be maintained, operations shall be made to assure the residual can be maintained or additional disinfection shall be installed and operated.

(10) Plant effluent residual concentration shall be maintained at or above one and zero-tenths (1.0) milligram per liter total chlorine.

(11) Adding disinfection may result in an increase in other contaminants of concern, depending on the characteristics of the source water and the distribution system. These contaminants include disinfection byproducts, lead, copper, and arsenic. A system will have the flexibility to select among a variety of corrective actions according to EPA. These actions include operation of treatment of source, or purifying water from source, which shall avoid these types of problems. Operation is acceptable with approval of the commissioner.

(12) A notice describing adverse effects of using chloramines shall be given to all users in the County Confidence Report or by continuous posting at the public information system as determined by the commissioner and shall include but is not limited to the following:

- (A) Potential effects of chloramines in the water for fish tanks or ponds.
- (B) Potential effects of patients on dialysis.

(f) Specific requirements for treating with chlorine dioxide are as follows:

(1) Equipment used for the production for chlorine dioxide shall be:

- (A) capable of maintaining a minimum seven-hundredths (0.07) milligram per liter chlorine dioxide or a maximum eight-tenths (0.8) milligram per liter in all active parts of the distribution system; and

- (B) capable of feeding chlorine dioxide to the water being treated at a dosage rate of two and zero-tenths (2.0) milligrams per liter.
- (2) Continuous disinfection of water drawn from groundwater sources may be required by the commissioner if water quality data, well construction, or system construction indicates a potential health hazard.
- (3) Disinfection is to supplement and not replace proper well location, construction, and source protection.
- (4) Testing for chlorine dioxide residual shall be completed daily, when the system is in operation, at the plant tap, and in the distribution system at one or more points representative of the distribution system. A chlorine dioxide residual test shall be completed and recorded on all bacteriological sample reports prior to collecting the bacteriological sample.
- (5) The commissioner may require any of the following:
- (A) A minimum contact time for all public water systems as specified in 327 IAC 8-2-1(15) and 327 IAC 8-2-1(19).
  - (B) Additional chlorine dioxide disinfection.
  - (C) Other disinfection methodology.
- (6) Distribution residual for ground water systems shall be maintained as follows:
- (A) At a minimum of seven-hundredths (0.07) milligram per liter chlorine dioxide;
  - (B) The residual disinfectant concentration in the water in the distribution system, measured as specified in 327 IAC 8-2-8.8(3) and 327 IAC 8-2-8.8(d), cannot be less than two-tenths (0.2) milligram per liter for more than four (4) hours; or
  - (C) The residual disinfectant concentration in the distribution system, measured as total chlorine, combined chlorine, or chlorine dioxide, as specified in 327 IAC 8-2-8.7(5) and 327 IAC 8-2-8.8(d), cannot be undetectable in more than five percent of the samples each month, for any two (2) consecutive months that the system serves water to the public.
- For systems that the distribution system with a heterotrophic bacteria concentration is equal to or greater than 500 (500) per milliliter, measured as heterotrophic plate count as specified in 327 IAC 8-2-8.7(3), is deemed to have a detectable disinfectant residual for purposes of determining compliance with the requirement. Thus, the value V in the following formula cannot exceed five percent (5%) in one (1) month, for any two (2) consecutive months:

$$V = \frac{c+d+e}{a+b} \times 100$$

Where a = number of instances where the residual disinfectant concentration is measured

b = number of instances where the residual disinfectant concentration is not measured but is measured

- c = number of instances where the residual disinfectant concentration is measured but not detected and no HPC is measured.
- d = number of instances where no residual disinfectant concentration is detected and where the HPC is greater than five hundred (500) per milliliter
- e = number of instances where the residual disinfectant concentration is measured and HPC is greater than five hundred (500) per milliliter

(7) If the commissioner determines, based on site-specific concentrations, that the system has no means for having a sample transported and analyzed for HPC by a certified laboratory under the requisite time and temperature conditions specified in 327 IAC 8-2-8.7 and that the system is providing adequate disinfection in the distribution system, the requirements of subdivision (3) do not apply.

(8) The commissioner may require an increase in disinfectant based on bacteriological samples that demonstrate the need for increased disinfection.

(9) If residual cannot be maintained, operational changes shall be implemented to ensure the residual can be maintained or additional disinfection facilities shall be installed and operated.

(10) Plant effluent residual concentration shall be maintained at no less than one-hundredths (0.07) milligram per liter chlorine dioxide.

(11) Adding disinfection may result in an increase in other contaminants of concern, depending on the characteristics of the source water and the disinfection system. These contaminants include disinfection byproducts, lead, copper, and arsenic. A system will have the flexibility to select among a variety of corrective actions according to EPA. These would include options such as treatment of source, or purchasing water from another source, which would avoid these types of problems. Options will be acceptable upon the approval of the commissioner.

(g) Disinfectant operation records must be maintained as follows:

(1) A copy of the daily operating report received by the certified operator in responsible charge shall be submitted to the commissioner no later than ten (10) days after the end of each month. These operating reports shall show the following:

- (A) Chemical disinfectant used.
- (B) Quantity of water treated.
- (C) Disinfectant used.
- (D) Quantity of disinfectant fed.

(E) Both free and total disinfectant residual test results from locations in the distribution system and plant if applicable.

(2) An individual set of records shall be maintained when more than one source of water with separate disinfectant equipment is used. Records shall be maintained for each booster station.

(3) A copy of the daily operating report shall be maintained by the certified operator in responsible charge of the public water system.

Records of all disinfectant residuals shall be kept for a period of five (5) years.

(5) Records for all chemical feed shall be kept for a period of five (5) years.

(h) The commissioner may approve other forms of disinfection provided that there is some type of daily measurement in the distribution system to determine the effectiveness of the disinfection.

(i) Disinfection requirements for Consecutive Communities are as follows:

(1) Consecutive community water systems are required to monitor daily for disinfectant concentration at the entry point and throughout the distribution system.

(2) The commissioner may require disinfection facilities to be installed and used:

(A) whenever the residual in any part of the distribution system cannot be maintained at the residuals for chlorine, chloramines, or chlorine dioxide;

(B) as specified in this section; or

(C) if daily operating report records of chlorine, chloramines, or chlorine dioxide residuals are not kept or submitted to the commissioner.

(j) If it is determined by the commissioner that the disinfectant levels for chlorine, chloramines, and chlorine dioxide are not performing efficiently for their intended use, the system shall be required to increase those levels or take other steps to ensure the water is adequately disinfected.

(k) The commissioner may approve other forms of disinfection that have not developed extensive experience or record of use in the state of Indiana, provided that the applicant submits evidence that the installation, process, or technique will produce drinking water of satisfactory quality, demonstrate a way to measure a disinfection residual, and maintain normal operating pressure and operating flow rate in accordance with this article.

(l) All community water systems and transient noncommunity water systems with susceptible populations and all transient community water systems that employ complex treatment processes required by the commissioner shall disinfect unless the systems meet all of the following requirements to be considered exempt from disinfection:

(1) The population served by a community water system does not exceed five hundred (500) individuals based upon the latest census figures or complete records of individuals served.

(2) Evaluation of vulnerability to bacteriological sources will be based on the driller's log, visual inspection of the wells, general geology of the area, and results of bacteriological analyses performed on raw water bacteriological samples. Systems which do not have this data may apply for an exemption as long as bacteriological results are satisfactory.

(3) The system shall not have a history of persistent or recurring contamination as

indicated by bacteriological results which show violation of the distribution water quality requirements for the most recent five (5) year period. Verification of vulnerability to bacteriological sources will be based on a three (3) year compliance period. The most recent twelve (12) months will be weighted more heavily. New systems without this data may apply for an exemption based on available bacteriological samples.

(4) The system shall not provide any raw water treatment other than fluoridation treatment or softening. This will be verified by facility inspection.

(m) Disinfection exemptions are valid until revoked. A disinfection exemption shall be revoked immediately without prior notice if a system fails to meet any of the exemption requirements under subsection (l). An application for a Construction Permit for the installation of disinfectant equipment shall be made within sixty (60) days following revocation. Disinfection equipment shall be installed and a properly certified operator shall be retained within one hundred twenty (120) days after the construction permit has been approved. Any of the following conditions will result in revocation:

- (1) Failure to maintain an active program of educating the public for consumer prevention of contamination.
- (2) Failure to have a certified operator or registered professional engineer on duty more than fifteen (15) days.
- (3) Failure to submit bacteriological samples as required by s. 226.28 during more than two (2) months of the past twelve (12) months or for more than (2) consecutive sampling periods.

A public water system aggrieved by the imposition of disinfectant revocation may appeal the decision of the commissioner at a hearing held in accordance with IC 4-21.5.

(n) The commissioner may require systems as mentioned in subsection (l) to disinfect if any of the following occurs:

- (1) Total coliform positive distribution samples in any four (4) quarter monitoring period or twelve (12) month period.
- (2) Two coliform positive distribution samples in any four (4) quarter monitoring period or twelve (12) month period.
- (3) The disinfection, distribution, or water treatment is determined to be inadequate to coliform positive samples.

(o) All chemicals that are added to the public water system shall meet the following requirements:

- (1) Chemicals shall be added to the water system per manufacturer's recommendation or by the Recommended Standards for Water Works.
- (2) Testing equipment shall be provided where applicable for determining the effectiveness of the chemical treatment.

(p) Preventive maintenance inspections shall be performed on a routine basis on all equipment according to the requirements of the manufacturer's recommendations or if determined otherwise by the commissioner.

(q) All chemicals shall be handled in accordance with 327 IAC 8-1 Public Water Supply Direct Additive and Indirect Additive Standards.

(r) If a system is reclassified due to any of the circumstances mentioned in 327 IAC 8-13-9 (l)(6), they shall be notified according to 327 IAC 8-12-2.5 and required to employ a person that meets the requirements of 327 IAC 8-12-1 (Public Water Pollution Control Board; 327 IAC 8-13-9)

### 327 IAC 8-13-10 Operation and Maintenance of Treatment Unit

Authority:

Affected:

Sec. 10 (a) General requirements for maintaining treatment unit are as follows:

- (1) The treatment unit shall be maintained so that it is capable of performing its original intended function.
- (2) All necessary repairs shall be made to the treatment unit in order to maintain its operation.
- (3) The design of a treatment unit shall not be changed without first receiving approval from the commissioner.

(b) Filtration requirements are as follows:

- (1) The owner shall demonstrate that each filter or each set of filters is designed.
- (2) Private water treatment may be required to demonstrate the applicability of proposed method of filtration.
- (3) The commissioner may require periodic treatment of media if there is evidence of bacterial growth hindering proper operation.
- (4) Each filter or each set of filters shall have an easily readable meter or rate of flow indicator.

(c) Requirements for gravity filters are as follows:

- (A) Filter redundancies shall be provided and operationally maintained.
- (B) Filter material shall meet Recommended Standards for Water Works or other standards approved by the commissioner upon demonstration of the ability to meet water quality standards.
- (C) Backwashing facilities shall be maintained to provide:
  - (i) A minimum rate of fifteen (15) gallons per minute per square foot,

consistent with water temperatures and specific gravity of the filter media unless otherwise specified by the commissioner.

(ii) A reduced rate of ten (10) gallons per minute per square foot may be acceptable for full depth anthracite or granular activated carbon filters.

(iii) A reduced rate of water for backwashing is acceptable if scouring or surface wash is provided.

(iv) Backwashing must be done with water that will not cause risk of an MCL violation or increase the health risk to the public.

(v) Redundant backwash pumps shall be maintained unless an alternate means of obtaining washwater is approved.

(vi) A system shall be capable of backwashing for no less than fifteen (15) minutes at the design rate of backwash.

(vii) A minimum of one (1) backwash regulator or valve on the backwash line to obtain the desired rate of water backwash.

(viii) A rate-of-flow indicator on the main backwash line for convenient reading by the operator during backwashing process.

(ix) Backwashing by a method which provides changes in the backwash water flow.

(x) A system shall conduct a media integrity test which consists of at a minimum checking for mudballs, channels, media freeboard, depth of media, and media condition at least once a year.

**(6) Rapid rate pressure filter requirements are as follows:**

(A) The normal use of the filters is for iron and manganese removal.

Pressure filters shall not be used in the treatment of surface water or ground water under the direct influence of surface water or following lime-soda softening unless specifically approved by the commissioner.

Rate of filtration shall not exceed fifteen (15) gallons per minute per square filter area based on in-plant testing as approved by the agency. Demonstrated satisfactory results at a higher rate.

**(7) Requirements for backwash water from iron & manganese filters are as follows:**

(A) Sampling taps shall be provided for control purposes. Taps shall be located in each treatment unit effluent. Testing equipment shall be provided to allow control the treatment process.

(B) Sand filter, lagoons, and detention tanks that are used to treat backwash wastewater from iron and manganese removal filters shall meet the Recommended Standards for Water Works, Waste and Disposal Section for sand filters, lagoons, and detention tanks.

(C) Refer to 327 IAC 6-1 for requirements for land application of sludge from a water plant.

(c) Aeration treatment devices described in this section may be used for oxidation, separation of gases or for taste and odor control. The following requirements shall be met:

(1) Aeration treatment devices shall be operated and maintained in accordance with Recommended Standards for Water Works.

(2) Provisions shall be made to ensure accessibility for maintenance and inspection.

(3) Aeration treatment devices shall be protected from insects and vermin.

(4) Aeration treatment devices shall have the air intake located above grade and the air introduced into the column passed through insect-tight screens and muslin as free of dust as possible.

(5) Aeration treatment devices shall be designed to ensure that the water outlet is adequately sealed to prevent unwanted loss of air and entrance of external water sources.

(6) The design for natural draft aeration shall provide that water is distributed uniformly over the top tray.

(7) Pressure aeration may be used for oxidation purposes if a pilot plant or current water quality data indicates the method's effectiveness. Pressure aeration devices are not approved for removal of dissolved gases. Pressure aeration devices shall be designed to meet the following requirements:

(A) Filters following pressure aeration shall have vacuum exhaust devices for release of air.

(B) Pressure aeration devices shall be designed to cause thorough mixing of compressed air with water being treated, and shall provide screened and filtered air, free of obnoxious fumes, dust, dirt and other contaminants.

(8) Other methods of aeration may be permitted if their effectiveness is demonstrated and approved by the department. Methods include but are not restricted to spraying, diffused air and mechanical agitation. The treatment process shall be designed to meet the particular needs of the water to be treated.

(9) Requirements for packed column aerators are as follows:

(i) The requirements for packed column aerators are as follows:

(ii) The tower construction shall be made of material compatible with potable water and be resistant to the aggressiveness of the water and dissolved solids.

(iii) A distribution system shall be provided that distributes the water evenly over the packing.

(iv) Adequate packing support shall be provided to prevent packing deformation.

(v) A moisture barrier shall be provided to prevent tower misting and icing.

(vi) Access manholes shall be provided in the side of the tower for facilitating inspection and replacement of the packing material.

(vii) An access ladder shall be provided.

(viii) Adequate foundation and lateral support shall be provided to



prevent overturning due to wind loads.

(viii) A screened, rain proof, outlet for air exhaust shall be provided.

(B) Packing requirements for packed column aerators are as follows:

(i) The packing material shall be compatible with use of potable water and shall be resistant to the aggressiveness of the water and dissolved gasses.

(ii) A method of cleaning the packing shall be provided where iron or manganese could be responsible for fouling the media.

(C) Blower requirements for packed column aerators are as follows:

(i) The blower shall be provided with a weather protected motor and an adequate foundation.

(ii) The blower inlet shall be provided with an air filter.

(iii) An air flow indicator for detecting air flow shall be provided.

(iv) The blower shall be adequately sized to provide sufficient air to achieve the desired removal rates.

(D) Other requirements for packed column aerators are as follows:

(i) A means shall be provided to drain the vent riser and the blower upon pump shut down.

(ii) All buried piping shall be maintained at a positive pressure greater than the elevation of the ground surface.

(iii) Influent and effluent sampling points shall be provided.

(iv) A method of determining flow to the aerator shall be provided.

(v) A means of bypassing the aerator shall be provided.

(vi) Air emission controls shall be provided if necessary to meet any applicable air quality standards.

(10) Aerated water shall receive disinfection prior to entry into the distribution system.

(11) Basins that are subject to oxidation or removal of dissolved gases from waters that have been no further treated other than disinfection shall be protected from contamination from the exterior by wind borne debris, or rainfall and water draining from the exterior of the basin.

(12) Aerators shall be inspected and maintained at least every two (2) years unless operation demonstrates that inspection is needed on a less frequent basis.

(13) Equipment shall be provided to test for dissolved oxygen (DO), pH, and temperature to determine the functioning of the aeration device.

(d) Requirements for rapid mix shall meet the following:

(1) Basins shall be equipped with mechanical mixing devices unless other methods, such as baffling, or injection of chemicals at a point of high velocity, are approved by the agency after determining that the other requirements of this section will be met. Variable speed drive equipment is recommended.

(2) The detention period for mechanical mixing shall be as short as possible

depending upon the velocity gradient provided by the mixing units.

(3) The rapid mix and flocculation basin shall be as close together as possible.

(4) A rapid mix device or chamber ahead of the solids contact unit may be required by the commissioner, to ensure proper mixing of chemicals.

(e) Clearwell requirements are as follows:

(1) The installation of baffle walls or additional reservoir capacity may be required where necessary to prevent short circuiting and to obtain adequate contact times.

(2) Inspection and cleaning of clear wells shall be done at a minimum of every five

(5) years. More frequent cleaning is necessary if operational problems occur, such as residual solids flowing from the clear well to the distribution system.

(f) Electrical switch gear and electrical controls shall be located outside, in areas not subject to flooding.

(g) Requirements for taking treatment units off line and placing treatment units back on line are as follows:

(1) A public water supply official shall notify the commissioner prior to taking a facility off line if it is likely to adversely affect the quality or quantity of the water in the distribution system.

(2) Newly constructed or repaired treatment units and clearwells shall be cleaned and disinfected before use in accordance with Recommended Standards for Water Works or AWWA Standards.

(3) Samples must be taken to determine the adequacy of disinfection following installation, replacement, or repair.

(4) Water samples shall be required to determine the adequacy of treatment. The number, location, and type of samples that shall be determined by the commissioner.

(h) Facility management practices are required by the commissioner. The sludge removal system shall provide the following:

(1) Sludge pipes shall not be less than 3 inches in diameter and shall be arranged for cleaning.

(2) Provisions shall be made for the operator to observe and sample sludge being discharged from the system during backwashing.

(3) Sludge disposal systems under IAC 6-1 contain additional specific requirements for sludge disposal. Flushing valves or hydrants shall be provided to back flush sludge lines and basins or for other purposes.

(i) When discharging wastewater from a water treatment plant to a sanitary sewer, the water system shall meet the requirements of 327 IAC 7.1-7, (*Water Pollution*

*and 327 IAC 8-13-10)*

### 327 IAC 8-13-11 Secondary Maximum Contaminant Levels

Authority:

Affected:

Sec. 11. (a) A public water system shall be continuously operated and maintained so that the water is:

- (1) safe in quality;
- (2) clean and adequate in quantity; and
- (3) chemically satisfactory for ordinary domestic consumption.

(b) All Community and Nontransient Noncommunity public water systems shall test for the following aesthetic effects at least one time per year:

- (1) Iron.
- (2) Manganese.

(c) A public water system shall test for the following aesthetic effects in tap water upon a written request by the commissioner:

Table 11-1: SECONDARY MAXIMUM CONTAMINANT LEVELS

<u>Constituent</u>	SECONDARY MCL
Aluminum	0.05 to 0.1 mg/L*
Chloride	250 mg/L
Color	15 pcu
Copper	1.0 mg/L
Corrosivity	Non-corrosive
Foaming Agent	0.5 mg/L
Iron	0.3 mg/L
Manganese	0.05 mg/L
Odor	3 TON (threshold odor number)
	6.5-8.5
	0.1 mg/l

Sulfate	250 mg/L
Total Dissolved Solids (TDS)	500 mg/L
Zinc	5 mg/L

*\*mg/L is milligrams of substance per liter of water*

(d) A written request by the commissioner shall include the following:

- (1) Investigation of complaints from the customers.
- (2) Which contaminant to sample.
- (3) Frequency of sampling.
- (4) Justification of the need for sampling.

(e) If a public water system exceeds the secondary maximum contaminant level listed in Table 11-1 for more than two (2) consecutive sampling periods where sampling frequency is three (3) months apart or greater, treatment or other means of secondary contaminant control may be required. Prior to making a decision on whether treatment is necessary, the commissioner shall consider the following:

- (1) Complaints from customers.
- (2) Magnitude of the exceedance of the secondary contaminant level.
- (3) Results of an affordability analysis performed by the system where treatment options or mitigation are analyzed and their costs are determined and ranked.
- (4) The ability of customers to afford the additional cost of treatment or mitigation.
- (5) The willingness of customers to pay for the additional cost of treatment or mitigation.
- (6) Outcome of a public hearing or other process with customers where subdivisions (1) through (5) are discussed.
- (7) The system shall provide information listed in subdivisions (3),(4), (5) and (6), if requested in writing by the commissioner, in order for the commissioner to make a determination of the need for a secondary contaminant exceedance.
- (8) Sequestering of the contaminant by treatment or mitigation as long as water quality is sustained and the number of complaints do not increase.

If sampling is done more frequently than every three (3) months, a running annual average shall be used. If a system agrees to treat the water for an exceedance of a secondary contaminant, subdivisions (3) through (6), and (8) need not be performed.

(f) If treatment or mitigation does not resolve the exceedance, the commissioner may require the system to undertake additional treatment or mitigation activities.

(g) The monitoring required by this section shall be done using the following

(1) Measurements for pH and copper shall be conducted using one (1) of the methods listed in section 327 IAC 8-2-45.

(2) Measurements for fluoride shall be conducted using one (1) of the methods listed in section 327 IAC 8-2-4.2.

(3) Measurements for aluminum shall be conducted using one (1) of the methods listed below:

- (A) Method 200.7\*;
- (B) Method 200.8\*;
- (C) Method 200.9\*;
- (D) Method 3120 B\*;
- (E) Method 3113 B\*; or
- (F) Method 3111 D\*.

(4) Measurements for chloride shall be conducted using one (1) of the methods listed below:

- (A) Method 300.0\*;
- (B) Method D4327-91\*;
- (C) Method 4110 B\*;
- (D) Method 4500-Cl<sup>-</sup> D\*; or
- (E) Method 4500-Cl<sup>-</sup> B\*.

(5) Measurements for color shall be conducted using Method 2150 B\*.

(6) Measurements for foaming agents shall be conducted using Method 5540 C\*.

(7) Measurements for iron shall be conducted using one (1) of the following methods:

- (A) Method 200.7\*;
- (B) Method 200.9\*;
- (C) Method 3120 B\*;
- (D) Method 3111 D\*;
- (E) Method 3113 B\*.

(8) Measurements for manganese shall be conducted using one (1) of the following methods:

- (A) Method 200.7\*;
- (B) Method 200.8\*;
- (C) Method 200.9\*;
- (D) Method 3120 B\*;
- (E) Method 3111 D\*;
- (F) Method 3113 B\*.

(9) Measurements for nitrate shall be conducted using Method 2150 B\*.

(10) Measurements for silver shall be conducted using one (1) of the following methods:

- (A) Method 200.7\*;
- (B) Method 200.8\*;
- (C) Method 200.9\*;

- (D) Method 3120 B\*;
- (E) Method 3111 B\*;
- (F) Method 3113 B\*; or
- (G) Method I-3720-85\*.

(11) Measurements for sulfate shall be conducted using one (1) of the following methods:

- (A) Method 300.0\*;
- (B) Method 375.2\*;
- (C) Method D-4327-91\*;
- (D) Method D516-90\*;
- (E) Method 4110 B\*;
- (F) Method 4500-SO<sub>4</sub><sup>2-</sup> F\*;
- (G) Method 4500-SO<sub>4</sub><sup>2-</sup> C,D\*; or
- (H) Method 4500-SO<sub>4</sub><sup>2-</sup> E\*.

(12) Measurements for TDS shall be conducted using Method 2540 C.

(13) Measurements for zinc shall be conducted using one (1) of the following methods:

- (A) Method 200.7\*;
- (B) Method 200.8\*;
- (C) Method 3120 B\*; or
- (D) Method 3111 B\*.

\*Methods referenced in this section may be obtained as follows:

(1) Methods 300.0 and 375.2 may be found in "Methods for the Determination of Inorganic Substances in Environmental Samples", EPA/600/R-93-100, August 1993, available at NTIS, PB94-120822.

(2) Methods 200.7, 200.8, and 200.9 may be found in "Methods for the Determination of Metals in Environmental Samples - Supplement 1", EPA/600/R-94-010, 1994, available at NTIS, PB 95-125472.

(3) Methods D-4327-91, D516-90, and D516-90 may be found in "Annual Book of ASTM Standards", 1994 and 1995, 11.01 and 11.02, American Society for Testing and Materials. Copies may be obtained from the American Society for Testing and Materials, 1900 Barr Harbor Drive, West Conshohocken, PA 19428.

(4) Methods 3120 B, 3111 D, 4110 B, 4500-Cl<sup>-</sup> D, 4500-Cl<sup>-</sup> B, 2120 B, 5540 C, 3111 B, 2150 B, 4500-Cl<sup>-</sup> A, 4500-SO<sub>4</sub><sup>2-</sup> C,D, 4500-SO<sub>4</sub><sup>2-</sup> E, and 2540 C may be found in 18<sup>th</sup> and 19<sup>th</sup> editions of "Standard Methods for the Examination of Water and Wastewater", 1991 and 1995, American Public Health Association, either edition may be used. Copies may be obtained from the American Public Health Association, 1015 Fifteenth Street NW, Washington, DC 20005.

(5) Method I-3720-85 may be found in "Techniques of Water Resources Investigation of the U.S. Geological Survey", Book 5, Chapter A-1, 3<sup>rd</sup> Ed. 1989, available at NTIS, Information Services, U.S. Geological Survey, Federal Center, Box

25286, Denver, CO 80225-0425.

These methods are available for copying at the Indiana Department of Environmental Management, Office of Water Quality, 100 North Senate Avenue, Room 1255, Indianapolis, Indiana 46206. (Water Pollution Control Board; 327 IAC 8-13-11)

### 327 IAC 8-13-12 Operational Testing

Authority:

Affected:

Sec. 12. (a) Sampling, testing and measurement for water quantity and quality, and system collection of operational data shall be performed by the supplier of water as required by this rule when the system is in operation. Sampling and testing procedures shall be approved by the commissioner. The commissioner may reduce sampling and testing on a case by case basis if data shows that individual requirements and testing are unnecessary.

(b) The commissioner may, in writing, require a public water system to perform additional sampling and testing when necessary to verify quantity and quality of water, treatment plant effectiveness, adequate distribution system operation, and to protect water consumers as well as the environment from adverse impacts.

(c) A public water system shall have meters at locations sufficient to record total production of water from all sources, including water purchased from or water sold to other public water systems. These meters shall be installed no later than two (2) years from the effective date of this rule.

(d) Requirements for operational testing equipment are as follows:

(1) Sampling equipment shall be provided for collecting representative samples of treated and untreated water.

(2) A public water system shall have test equipment for measuring the level of residual disinfectant used in accordance with 327 IAC 8-2-8.7(5). The commissioner may approve other methodologies.

(3) Testing of specific treatment processes as applicable must be available for plant operators:

(A) Fluoride testing requirements are as follows:

(i) Test equipment for measuring levels of fluoride ion shall be provided.

(ii) Equipment shall be provided for measuring the quantity of fluoride in the water.

(iii) Equipment utilizing the sodium, 2-(parasulfophenylazo)-1,8-dihydroxy-3, 6-naphthalene disulfonate method (SPADNS) or electrode method is required.

- (iv) When also feeding phosphates, the electrode method is required.
- (v) The Alizarin Visual method will be approved only in special cases where the water can allocate the extra time needed for testing.

(B) Iron removal requirements are as follows:

- (i) Test equipment for measuring iron levels shall be provided.
- (ii) The equipment shall have the capacity to accurately measure iron content to a minimum of one-tenth (0.1) milligram per liter.

(C) Manganese removal; the equipment shall have the capacity to accurately measure the manganese content to a minimum of five hundredths (0.05) milligram per liter.

(D) Ion exchange softening; equipment for measuring hardness.

(E) Coagulation and filtration; jar test equipment for measuring chemical dosages and equipment for measuring pH, hardness, and alkalinity.

(F) Lime softening; equipment for measuring pH, hardness, and alkalinity.

(G) Reverse osmosis; equipment for measuring total dissolved solids, chlorides, and sulfates.

(H) Polyphosphate addition; equipment for measuring both ortho-phosphates and total phosphates.

(I) Chlorination and disinfectant residual testing requirements are as follows:

- (i) The equipment shall be capable of measuring residuals to the nearest one-tenth (0.1) milligram per liter in the range below five-tenths (0.5) milligram per liter.
- (ii) The equipment shall be capable of measuring residuals to the nearest two-tenths (0.2) milligram per liter between the range of five-tenths (0.5) milligram per liter to two (2) milligrams per liter.

(J) pH adjustment equipment for measuring pH shall be provided using the titrimetric method.

(4) The commissioner may require other forms of operational testing equipment.

(Water Pollution Control Board; 32 Pa.C.S. § 12)

**327 IAC 8-13-13 Rule Requirements**

Authority:  
Affected:

Sec. 13. All suppliers for community water systems shall submit a Monthly Report of Operation (MRO) on forms prescribed by the commissioner. Computer generated forms are acceptable if, at a minimum, all the required data are submitted on the form and the form must be submitted and received for approval by the commissioner prior to use. Forms already in use from the effective date of this rule can continue to be used if the commissioner needs additional information, new forms can be requested. All forms shall include the following data if applicable:



- (1) Daily quantities of water treated.
- (2) Daily quantities of water distributed.
- (3) Daily quantities of chemicals added to the water.
- (4) Daily operation of treatment processes, including backwashing of filters by amount of filter run time and total gallons of backwash.
- (5) Results of chemical, physical, or other tests performed for plant control.
- (6) Groundwater depth measurements, both static and pumping measurements where applicable as required by 327 IAC 8-13-8.
- (7) Totals and averages of the above measurements where spaces are provided on the report form.
- (8) Other data determined necessary by the commissioner.

A public water system may upon approval of the commissioner relax reporting requirements. All MRO's shall be submitted no later than ten (10) days after the end of each month. All MRO's shall be kept for a period of five (5) years. *(Public Water Control Board; 327 IAC 8-13-13)*

### 327 IAC 8-13-14 Storage Requirements

Authority:

Affected:

Sec. 14. (a) General water storage requirements are as follows:

- (1) A storage tank used for the storage of ground water or treated water which is connected to a distribution system of a public water system must be covered, constructed, and located to adequately protect the water from contamination.
- (2) A water storage facility must be inspected at least once every five (5) years and maintained as necessary.
- (3) Interior and exterior paint coatings for water storage tanks or treatment structures must be inspected at least once every five (5) years by an individual trained to evaluate the integrity of the paint system. The interior and exterior coatings must be repainted as necessary to maintain coating and structural integrity. The supplier may perform the inspection if experienced in inspection.
- (4) Upon completion of the water storage facility inspection, a report, documenting the condition of the facility, must be kept on site or available for review.
- (5) Storage tanks must be protected in a manner that prevents freezing.
- (6) Storage tanks must be protected in a manner that prevents excessive holding time which is determined by:
  - (A) lack of disinfection residual; or
  - (B) positive total coliform samples.

(b) Location requirements for water storage facilities are as follows:

(1) Location of storage facilities must be accessible to authorized personnel during the entire year.

(2) Where necessary, road improvements shall be installed to provide year round access.

(3) Storage facilities and access roads must be located on property:

(A) owned by the water system; or

(B) for which other legally binding access rights have been obtained.

(c) Overflow pipe requirements are as follows:

(1) The overflow pipe of a water storage structure must:

(A) Discharge with a free air break over a drainage structure, splash pad, or riprap.

(B) Be maintained according to 327 IAC 8-10.

(2) Overflows may not be directly connected to a sanitary sewer.

(3) The overflow must be screened with mesh noncorrosive screen within the pipe at the location least susceptible to vandalism and entrance of

(4) Negative impacts to the environment from the discharge of overflow shall be prevented.

(d) Disinfection requirements for water storage facilities are as follows:

(1) Finished water storage structures must be disinfected before put into service and before being returned to service following maintenance or repair work.

(2) Procedures for disinfection of water storage facilities, outlined in the current AWWA standard C652, must be followed.

(3) An equivalent procedure for disinfection of water storage facilities may be approved by the commissioner.

(e) All storage wells and storage tanks must have a liquid level indicator located at the tank site that meets the following requirements:

(1) The indicator may be a float with a moving target, an ultrasonic level indicator, or a pressure calibrated water.

(2) If an electronic or standpipe float with a moving target indicator, it must also have a indicator located at ground level.

(3) Pressure gauges must be less than three (3) inches in diameter and calibrated at not more than two (2) intervals.

(4) Remote reading gauges at the public water system's treatment plant or pumping station will not eliminate the requirement for a gauge at the tank site or another method for measuring volume, unless the tank is located at the plant or station.

(f) Hydropneumatic or pressure tanks must meet the following requirements:

(1) Hydropneumatic or pressure tanks installed after July 17, 1999 must meet the requirements set forth in 327 IAC 8-3.4-14.

(2) All pressure tanks must install and maintain a pressure release device and an easily readable pressure gauge.

(g) No tank or container that has previously been used for any non-potable purpose may be used to store potable water. Where a used tank is proposed for use, a letter from the previous owner or owners must be submitted to the commissioner which states the history of the tank.

(h) The commissioner may approve, upon written request, other forms of storage or alternative storage requirements provided that there is documentation to support the effectiveness of the request. (Water Pollution Control Board; 327 L.A.C. 3.1.1)